



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,540	01/29/2004	Mirmira Ramarao Dwarakanath	ENP-003	5353
25962 7590 01/18/2007 SLATER & MATSIL, L.L.P. 17950 PRESTON RD, SUITE 1000 DALLAS, TX 75252-5793			EXAMINER BEHM, HARRY RAYMOND	
			ART UNIT	PAPER NUMBER
			2838	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/18/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/767,540	<b>Applicant(s)</b> DWARAKANATH ET AL.	
	<b>Examiner</b> Harry Behm	<b>Art Unit</b> 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 December 2006.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-20 and 24-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-20 and 24-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/9/04</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statement filed 8/9/04 was only partially scanned in the first office action of 1/27/06. The remaining sheet has been included in this office action.

### ***Response to Arguments***

Applicant's arguments with respect to claim 12/01/06 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

Claims 31 and 35 are objected to because of the following informalities: 'a common node' and 'a driver switch' should have antecedent basis or have additional modifiers. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16-20 and 24-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Steigerwald (US 4,912,622)

With respect to Claim 16, Steigerwald discloses a power converter (Fig. 1 2) couplable to a source of electrical power (Fig. 1 +Ed) adapted to provide an input voltage thereto, comprising: a power train including a switch (Fig. 1 S1,S2), referenced

Art Unit: 2838

to said input voltage (Fig. 1 +Ed) and subject to a control voltage limit [FET has control voltage limit], configured to conduct for a duty cycle (duty cycle of gate) and provide a regulated output characteristic at an output of said power converter (Fig. 5 a); a controller (commands S1,S2 through drivers) configured to provide a signal (Fig. 3a VP1) to control said duty cycle of said switch (Fig. 3a Q1); and a driver (Fig. 3a 10) including switching circuitry (Fig. 3a 10 transistors) referenced to a voltage level (Fig. 3a Ei) different from said input voltage (Fig. 3a Ed) and configured to provide a drive signal (Fig. 3a Q1 gate signal) for said switch within said control voltage limit [FET Q1 is not damaged] as a function of said signal (Fig. 3a VP1 or VP2) from said controller, said switching circuitry including a first pair of series-coupled driver switches (Fig. 3a Q35,Q10) of opposite polarity [P and N] cross coupled [through Q21 or Q33] with a second pair of series-coupled driver switches (Fig. 3a Q32,Q7) of opposite polarity [P-N].

With respect to Claim 17, Steigerwald discloses the power converter as recited in claim 16 wherein said controller is configured to provide a complement (Fig. 3a VP2) of said signal (Fig. 3a VP1) to control said duty cycle of said switch, said driver being configured to provide said drive signal for said switch within said control voltage limit as a function of said complement of said signal from said controller.

With respect to Claim 18, Steigerwald discloses the power converter as recited in claim 16 wherein said switch (Fig. 3a Q1) is a metal oxide semiconductor field effect transistor (Fig. 3a PMOS) (MOSFET) referenced to said input voltage (Fig. 3a Ed), said switching circuitry (Fig. 3a 10) configured to provide a gate drive signal (Fig. 3a gate) for

Art Unit: 2838

said switch within a gate voltage limit thereof.

With respect to Claim 19, Steigerwald discloses the power converter as recited in claim 16 wherein said switching circuitry is couplable to said source of electrical power (Fig. 3a Ed) and a bias voltage source [source of Ei] for providing a bias voltage (Fig. 3a Ei), said first and said second pair of series-coupled driver switches cooperating to provide said drive signal (Fig. 3a Q1 GATE) referenced to said input voltage (Fig. 4b Ed) and within said control voltage limit of said switch.

With respect to Claim 20, Steigerwald discloses the power converter as recited in claim 16 wherein said switching circuitry comprises at least one driver switch (Fig. 3a Q10) configured to enable a mode of operation [normal operation with Q1 on] wherein said drive signal (Fig. 3a Q1 GATE) for said switch is referenced to said voltage level (Fig. 4b Ei).

With respect to Claim 24, Steigerwald discloses the power converter as recited in Claim 16 wherein a voltage of said drive signal (Fig. 3a Q1 gate) is less than [12V] said input voltage [58V].

With respect to Claim 31, Steigerwald discloses the power converter as recited in Claim 16 wherein said first pair of series-coupled driver switches (Fig. 3a Q35,Q10) are connected by a common node [node Q35-R10] coupled via a clamp driver switch (Fig. 3a Q21) to a driver switch (Fig. 3a Q32) of said second pair of series-coupled driver switches (Fig. 3a Q32,Q7), said second pair of series-coupled driver switches being connected by a common node (Fig. 3a Q32-Q7) coupled [coupled through common node Ei through D5,R9 to GND] via another clamp driver switch (Fig. 3a Q9) to a driver

Art Unit: 2838

switch (Fig. 3a Q10) of said first pair of series-coupled driver switches (Fig. 3a Q35,Q10).

With respect to Claim 32, Steigerwald discloses the power converter as recited in Claim 31 further comprising a clamp disabling driver switch (Fig. 3a Q37) coupled to said clamp driver switch (Fig. 3a Q21) and another clamp disabling driver switch (Fig. 3a Q30) coupled to said another clamp driver switch (Fig. 3a Q9) configured to disable a clamping operation associated therewith.

With respect to Claim 33, Steigerwald discloses the power converter as recited in Claim 32 wherein said clamp disabling driver switch (Fig. 3a Q37) and said another clamp driver switch (Fig. 3a Q30) are parallel coupled [parallel coupled from Ed to Ei or ground] to said clamp driver switch and said another clamp driver switch, respectively.

With respect to Claim 34, Steigerwald discloses the power converter as recited in Claim 16 wherein a driver switch (Fig. 3 Q10) of said first pair of series-coupled driver switches is configured to receive said signal (Fig. 3a VP2) from said controller and a driver switch (Fig. 3a Q7) of said second pair of series-coupled driver switches is configured to receive a complement (Fig. 3a VP1) of said signal from said controller, said drive signal (Fig. 3a VP2) configured to be produced at a control terminal [gate] of another driver switch (Fig. 1 Q32) of said second pair of series-coupled driver switches.

With respect to Claims 25-30 and 35-38, Steigerwald discloses a method of operating a power converter, see claims 16-20, 24 and 31-34 above for item matching.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

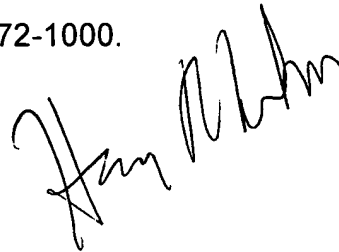
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional 35 USC 102 rejections could be made with the following references: Magazzu (US 5,977,811), Phillips (US 5,796,276), Skoumand (US 5,258,662), Dixon (US 5,371,415) and Milazzo (US 6,407,594) disclose drivers including switching circuitry referenced to a voltage level different from the input voltage.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Behm whose telephone number is 571-272-8929. The examiner can normally be reached on Business EST.

Art Unit: 2838

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-2721989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KARL EASTHOM  
SUPERVISORY PATENT EXAMINER